

**Atty Docket: 990176UIPIDI
(1391-26101)**

Patent

AMENDMENTS TO THE CLAIMS

Listing of Claims:

1. (Original) An instrument comprising:
 - exactly one tube that receives a sample fluid having a density;
 - a rigid pressure housing enclosing said tube and forming an annular area between said tube and said pressure housing;
 - a vibration source attached to said tube;
 - exactly one vibration detector attached to said tube; and
 - a measurement module electrically coupled to said vibration source and said vibration detector, wherein the measurement module is configured to determine a density of the sample fluid using a resonant frequency of the tube,wherein said vibration detector comprises:
 - a first magnet mounted to said tube wherein said first magnet has a first magnetic field;
 - a second magnet mounted to said first magnet wherein said second magnet has a second magnetic field that opposes the first magnetic field;
 - a first coil winding mounted to said pressure housing; and
 - a second coil winding mounted to said pressure housing adjacent to said first coil.
2. (Original) The instrument of claim 1 wherein said first coil winding and said second coil winding have axes of symmetry that align with axes of symmetry of said first and second magnets.
3. (Original) The instrument of claim 1 wherein a plane defined between said coiled windings is aligned with a plane defined between said first and second magnets.

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4. (Original) The instrument of claim 1 wherein said coil windings are phased in opposition so as to minimize voltage generated by external magnetic fields.

5-6. (Canceled).

7. (Original) An instrument comprising:

no more than one tube that receives a sample fluid having a density;

a rigid pressure housing enclosing said tube and forming an annular area between said tube and said pressure housing;

a vibration source attached to said tube;

no more than one vibration detector attached to said tube; and

a measurement module electrically coupled to said vibration source and said vibration detector, wherein the measurement module is configured to determine a density of the sample fluid using a resonant frequency of the tube.

8. (Original) The instrument of claim 7 wherein said vibration detector comprises:

a first magnet mounted to said tube wherein said first magnet has a first magnetic field;

a second magnet mounted to said first magnet wherein said second magnet has a second magnetic field that opposes the first magnetic field;

a first coil winding mounted to said pressure housing; and

a second coil winding mounted to said pressure housing adjacent to said first coil.

9. (New) The instrument of claim 1 wherein the vibration source further comprises a vibration magnetic core attached to the tube and a vibration coiled winding attached to the pressure housing.

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10. (New) The instrument of claim 1 wherein the first coil winding and the second coil winding of the vibration detector are mounted end-to-end with symmetry axes aligned and electronically connected in series.
11. (New) The instrument of claim 9 wherein the first coil winding and the second coil winding of the vibration detector are mounted end-to-end with symmetry axes aligned and electronically connected in series.
12. (New) The instrument of claim 1 wherein a plane defined by the intersection of the first magnet and second magnet of the vibration detector is aligned with a plane defined by the intersection of the first coil winding and the second coil winding of the vibration detector.
13. (New) The instrument of claim 9 wherein a plane defined by the intersection of the first magnet and second magnet of the vibration detector is aligned with a plane defined by the intersection of the first coil winding and the second coil winding of the vibration detector.
14. (New) The instrument of claim 11 wherein a plane defined by the intersection of the first magnet and second magnet of the vibration detector is aligned with a plane defined by the intersection of the first coil winding and the second coil winding of the vibration detector.